THE LIFE HISTORY OF ANISYNTA TILLYARDI WATERHOUSE AND LYELL (LEPIDOPTERA: HESPERIIDAE: TRAPEZITINAE)

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Abstract

The previously unrecorded life history of *Anisynta tillyardi* Waterhouse and Lyell is described, and the relationship of this species to other species of the genus *Anisynta* and to other genera is discussed.

Introduction

The genus *Anisynta* Lower 1911 contains six species, widely, and in most cases locally, distributed in southern Australia (Common and Waterhouse, 1972). *Anisynta tillyardi* is found further north than the other species of the genus, and is restricted to mountain forests of northern New South Wales and southern Queensland, at altitudes of about 900 to 1,500 metres.

In July 1971 the author collected 24 second and third instar larvae from grass debris near Mt. Kiangarow, Bunya Mountains, 160 km north-west of Brisbane, Queensland, and six of these were subsequently reared to adults at Rockhampton, central Queensland. In January 1972 adult females were observed laying eggs on grass on the slopes of Mt. Kiangarow.

Anisynta tillyardi Waterhouse and Lyell, 1912

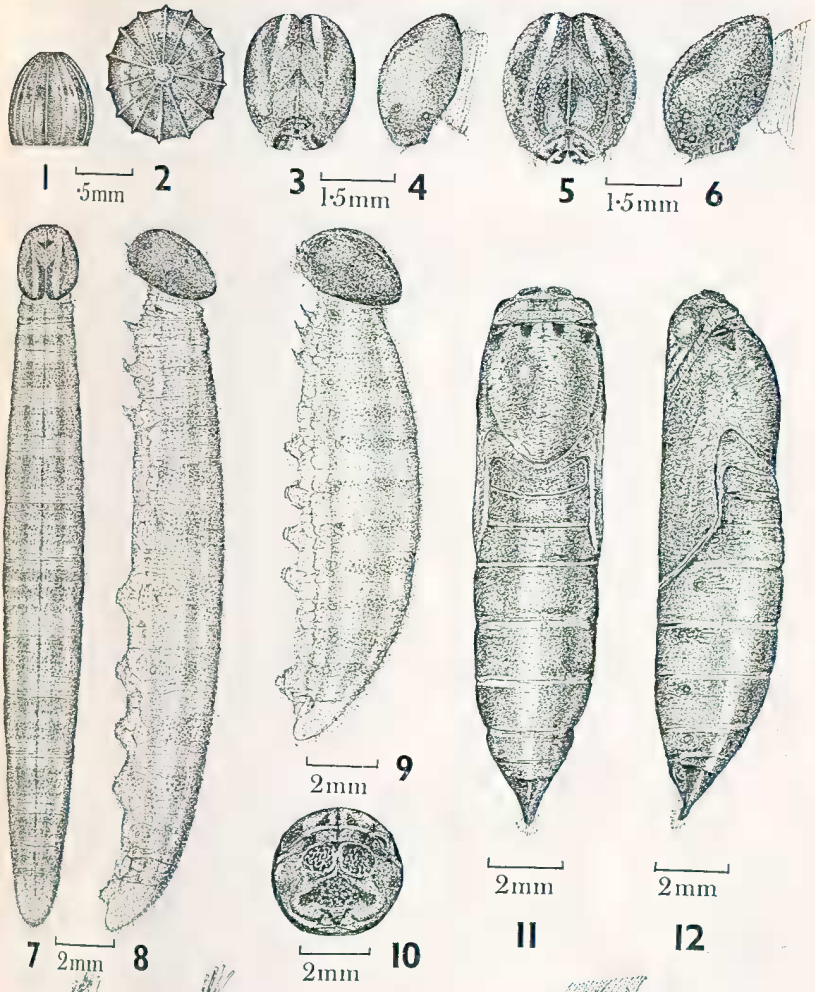
Larval food plant. Poa labillardieri Steud. (Poaceae) and probably other soft grasses.

Egg (Figs 1, 2). Dome-shaped, approx. 0.75 mm wide (large diameter), 0.50 mm high, white when first laid, turning greyish white with pink markings around central perimeter; 13-15 vertical ribs.

Larva (Figs 3-9). Second and third instar (Figs 3, 4, 7, 8) length at rest 10-13 mm, extended 14-17 mm; head, width 2.2 mm, slightly granulated with a fairly deep median longitudinal groove, pale brown with dark brown central dorsal band edged white, posterior margin and frons brown; body brown-green shading to dull green ventrally and tinged pink at junction of segments, central area of each segment covered with minute brown spinules, brown dorsal line and obscure paler dorsolateral lines.

Final instar (Figs 5, 6, 9), length at rest 15 mm, extended 20 mm; head. width 5 mm granulated and furrowed, similar to second and third instars but with dark central and lateral markings extended; body similar to second and third instars.

FIGS 1-16. Immature stages, larval shelters and adult female of *Anisynta tillyardi* Waterhouse and Lyell from Bunya Mts., Queensland. (1-2) egg; 1. lateral; 2, dorsal: (3-4) second and third instar larval head; 3, frontal; 4, lateral: (5-6) fourth and fifth instar larval head; 5, frontal; 6, lateral: (7-8) second and third instar larva; 7, dorsal; 8, lateral: (9) mature larva, lateral: (10) operculum. frontal: (11-12) female pupa; 11, dorsal; 12, lateral: (13-15) larval shelters: (16) adult female laying a row of eggs on the underside of a grass blade.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Pupa (Figs 11, 12). Length 14 mm; broad, anteriorly tapering to a long decurved posterior segment, smooth, red-brown with darker anterior and posterior segments, anterior covered with a white waxy powder, spiracles black, anterior of mesothorax with two dark dorsolateral markings; operculum (Fig. 10) black, rounded and divided into three slightly raised granulated areas.

Life History

The adults fly from January to March. Their flight is rapid when moving through the forest, but during warm weather males are frequently seen close to the ground in favoured sunny clearings, where they rest with wings open or fly with a slow hovering flight from flower to flower. Females are more often seen flying around grass tussocks in damp sheltered clearings, apparently searching for suitable sites to lay eggs. The eggs are usually laid in a row of up to six on the underside of a grass blade on tussocks growing at the base of a log or tree trunk or on a grassy embankment. Larvae can be found in spirally twisted or folded dicotyledonous leaf litter spun into tube-like shelters (Fig. 13) and attached at the open end with silk to the food plant and nearby debris. The duration of the egg stage was not recorded and first instar larvae were not found.

Captive larvae placed on their natural food plant and other grasses readily made shelters in leaf litter provided. However, cylindrical shelters (Fig. 15) made from grass leaf blades were also built, and one larva made a tent-like shelter (Fig. 14) from stalks of *P. labillardieri* and rested in this shelter in a head-downward position. Larvae in these latter types of shelter remained at rest in an extended posture (Figs 7, 8), whereas those in fallen dead leaves were not extended (Fig. 9).

The larvae feed in the late evening and again in early morning. Several larvae may be found on one tussock of grass. They are very active and voracious feeders, and like many other Trapezitinae have the ability to eject frass some distance from their food plant. Pupation occurs in leaf debris at the base of the foodplant or in nearby vegetation. At Rockhampton the larvae pupated in late September and adults emerged two weeks later, about three months earlier than those at Bunya Mountains, and were smaller in size.

Discussion

Until recent years little was known about the life history of the species of *Anisynta* with the exception of *Anisynta sphenosema* (Meyrick and Lower) (Waterhouse, 1932). However, descriptions of the early stages of *Anisynta dominula draco* Waterhouse and *Anisynta monticolae* (Olliff) were given by Common and Waterhouse (1972).

A. sphenosema and *A. tillyardi* appear to have similar life histories, both larvae and pupae resembling those of *Trapezites* Hübner, although the pupae are somewhat slimmer. *A. tillyardi* pupates in a rolled fallen leaf, a character commonly shared by species of *Trapezites*. In contrast,

A. dominula and *A. monticolae* larvae construct cylindrical shelters within a grass tussock and pupate head upwards in these shelters. They are more specialized than *A. sphenosema* and *A. tillyardi,* each having a more sculptured operculum. Pupation in upright shelters in the Trapezitinae is generally accompanied by specialization of the operculum, which reaches a maximum in *Hesperilla* Hewitson. Adult *A. sphenosema* and *A. tillyardi* lack the male sex-brand found in *A. dominula* and *A. monticolae.* However, *A. tillyardi* approaches *A. monticolae* in wing shape and colour pattern and both species are found in montane vegetation, although in *A. tillyardi* this includes rain forest with northern elements. These two species have similar male genitalia and are undoubtedly closely allied despite the differences in their life history.

The three shelter-making techniques of *A. tillyardi* larvae might be a significant factor in the evolution of the Trapezitinae. In this subfamily the subdivisions Hesperilline, Mesodine and Trapezitine (Waterhouse, 1932) can generally be distinguished by larval and pupal morphology and by the three characteristic forms of larval shelter.

Acknowledgements

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References

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A NEW LOCALITY FOR *PROEIDOSA POLYSEMA* (LOWER) (LEPIDOPTERA: HESPERIIDAE)

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While travelling through north central Queensland on 30th September, 1974, I had the good fortune to take a larva of *Proeidosa polysema* (Lower) on *Triodia pungens* R. Br. 23 km south of the Belyanda River on the Clermont to Charters Towers road. The country in this area consists of sedimentary rocks and sandy soil sustaining open forests of bloodwood and other eucalypt species. The record of *P. polysema* in this area is noteworthy, as the species has not been previously taken between the Rockhampton-Theodore area and Petford in northern Queensland (Atkins, 1973). The larva was of the pale form found at Petford and described by Atkins.

Reference

Atkins, A. F., 1973. A new genus *Proeidosa* for an Australian skipper *Pasma polysema* (Lower) (Lepidoptera: Hesperiidae: Trapezitinae). *J. Aust. ent. Soc.* (12)4: 253-260.